

EXPRESS MAIL LABEL NO. EL746147222US

CLAIMS

1 1. An optical communication system to extend a range or data communications  
2 comprising:  
3 a mobile communication device;  
4 an output buffer;  
5 an optical transmitter associated with the device;  
6 wherein the transmitter transmits optical data comprising a message bit that is  
7 represented by a plurality of optical transmission pulses for each bit in the output buffer.

1 2. The optical communication system of claim 1, wherein the plurality of optical  
2 transmission pulses are identical for each bit in the output buffer.

**EXPRESS MAIL LABEL NO. EL746147222US**

1 3. An apparatus to extend a range of infrared data communication, the apparatus  
2 comprising:

3 a device for receiving user inputs; and

4 an infrared transmitter associated with the device, wherein the transmitter transmits  
5 infrared data as signals wherein a bit of infrared data is represented by a plurality of identical  
6 pulses.

1 4. The apparatus as defined in claim 3, wherein the device for receiving user inputs  
2 comprises pre-existing unmodified hardware devices selected from the group of pre-existing  
3 unmodified hardware devices of: a personal data assistant, a 3Com Palm Pilot compatible  
4 device, and a Windows CE based device.

5 5. The apparatus as defined in claim 3, further comprising a display for displaying a visual  
6 representation of incoming signal strength.

1 6. The apparatus as defined in claim 3, wherein the incoming signal strength is measured  
2 through the use of an incoming synchronization header.

3 7. The apparatus as defined in claim 3, wherein the incoming signal strength is measured  
4 through a summation of received pulses.

1 8. The apparatus as defined in claim 3, wherein the incoming signal strength is measured  
2 through graduation of the pulse width and therefore the energy of a synchronizing signal.

**EXPRESS MAIL LABEL NO. EL746147222US**

1 9. The method as defined in claim 3, wherein the apparatus further comprises an infrared  
2 receiver for receiving incoming signals from a stationary object wherein the infrared receiver  
3 and infrared transmitter comprise a transceiver for asymmetric communication for slow  
4 transmission and fast reception of information.

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**EXPRESS MAIL LABEL NO. EL74614722US**

1 10. An apparatus for receiving and transmitting infrared data communication, the  
2 apparatus comprising:

3 a stationary object for reception of the infrared data communication; and  
4 a plurality of infrared receivers spatially arranged around the apparatus.

1 11. The apparatus as defined in claim 10, wherein the plurality of infrared receivers  
2 comprise electro-optical receivers.

1 12. The apparatus as defined in claim 11, wherein the stationary object comprises an  
2 access point for intercommunication of infrared data.

1 13. The apparatus as defined in claim 11, further comprising a signal processor for  
2 combining and reconstructing a sequence of signals into data bits and for converting data to  
3 be transmitted into signals applied to high power infrared transmitters.

1 14. The apparatus as defined in claim 11, further comprising a plurality of high power  
2 infrared transmitters for transmitting infrared signals to a user device wherein each infrared  
3 transmitter is associated with exactly one of the plurality of infrared receivers thereby each pair  
4 so arranged forming an infrared transceiver wherein a plurality of the transceivers provides  
5 multiple spatially multiplexed communication channels.

1 15. The apparatus as defined in claim 14, wherein the infrared data communication  
2 comprises information bits wherein each information bit is represented by a stream of  
3 identical data pulses.

1 16. The apparatus as defined in claim 14, further comprising a communication channel for  
2 digitally linking a signal processor with a translation device.

**EXPRESS MAIL LABEL NO. EL746147222US**

1 17. The apparatus as defined in claim 16, wherein the communication channel comprises  
2 a communication channel selected from the group of communication channels of: an ac  
3 modem, an RF modem, an analog phone modem, an asynchronous wire and an ethernet  
4 controller.

1 18. The apparatus as defined in claim 17, wherein the translation device comprises a  
2 transcoder for translation of protocols, formats, commands and control logic from one  
3 computing device or application to another.

1 19. The apparatus as defined in claim 18 wherein the computing device or application  
2 comprises computing devices or applications selected from the group of computing devices  
3 or applications of: a desktop computer, an access point, the Internet, a computer network, a  
4 printer, a cellular phone, a point of sale terminal, a laptop computer and a database.

**EXPRESS MAIL LABEL NO. EL746147222US**

1 20. A method for extending a range of infrared data communication between a user device  
2 and another object, the method on the user device comprising the steps of:

3 receiving user inputs on a user device; and

4 transmitting infrared data as signals from an infrared transmitter associated with the  
5 device, wherein a bit of infrared data is represented by a plurality of identical pulses.

1 21. The method as defined in claim 20, wherein the step of receiving user inputs includes  
2 receiving user inputs on a user device comprising user pre-existing unmodified hardware  
3 devices selected from the group of user pre-existing unmodified hardware devices of: a  
4 personal data assistant, a 3Com Palm Pilot compatible device, and a Windows CE based  
5 device.

1 22. The method as defined in claim 20, further comprising the programming instruction of:  
2 displaying a visual representation of incoming signal strength on a display associated  
3 with the user device.  
4  
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**EXPRESS MAIL LABEL NO. EL746147222US**

1 23. A computer readable medium containing programming instructions for extending a  
2 range of infrared data communication between a user device and another object, the method  
3 on the user device, the computer readable medium comprising the programming instructions  
4 of:

5 receiving user inputs on the user device; and  
6 transmitting infrared data as signals from an infrared transmitter associated with the  
7 device, wherein a bit of infrared data is represented by a plurality of identical pulses.

1 24. The computer readable medium as defined in claim 23, wherein the programming  
2 instruction of receiving user inputs includes receiving user inputs on a user device comprising  
3 user pre-existing unmodified hardware devices selected from the group of user pre-existing  
4 unmodified hardware devices of: a personal data assistant, a 3Com Palm Pilot compatible  
5 device, and a Windows CE based device.

1 25. The computer readable medium as defined in claim 23, further comprising the  
2 programming instruction of:

3 displaying a visual representation of incoming signal strength on a display associated  
4 with the user device.